

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-222992

(43) Date of publication of application : 08.08.2003

(51)Int Cl

G03F 1/14  
B65D 6/02  
B65D 85/86  
H01L 21/68

(21) Application number : 2002-024007

(71)Applicant : ARAKAWA JIISHIKK

(22) Date of filing : 31-01-2002

(72) Inventor : SAITO SHINSAKI

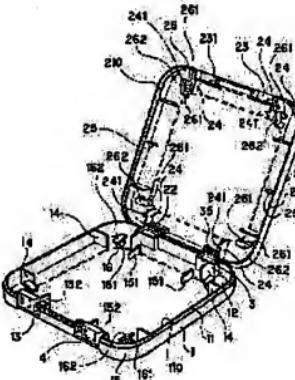
OTSUKA CHUZABURO

**(54) MASK CASE**

(57) Abstract:

**PROBLEM TO BE SOLVED:** To eliminate dust stuck to a photomask caused by static electricity developed by the displacement of the photomask in housing the photomask in a mask case and to prevent damage to the photomask and to eliminate the displacement of the photomask housed in the mask case.

**SOLUTION:** A locking section in the opening portion direction of the main body of the mask case for housing the photomask is disposed in such a way that the locking section may gradually be lowered toward a center portion. A locking section in the depth direction is disposed in such a way that the locking section may gradually be lowered toward the opening portion direction of the case. On the other hand, a locking section in the opening portion direction of a cover is disposed in such a way that the locking section may gradually be lowered toward the depth direction of the case. A locking section in the depth direction of the cover is disposed in such a way that the locking section may gradually be lowered toward the center portion of the case. When the cover is closed, the locking section of the main body and the locking section in the opening portion direction of the cover press the ridge line portion of the mask at respective inclined surfaces from all the right and left directions as well as from the up and down directions.



BEST AVAILABLE COPY

## **LEGAL STATUS**

[Date of request for examination] 26.02.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

**\* NOTICES \***

JPO and NCIPi are not responsible for any  
damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

**CLAIMS**

---

**[Claim(s)]**

[Claim 1] Body Lid which closes opening of 1 and a body In the mask case for containing the photo mask which has 2 Body Inclined plane for laying a photo mask in the internal direction of body opening and the internal direction of the back of 1 It has the stop section 16 with 162. Lid Lid corresponding to these stop sections 16 when 2 is shut Inclined plane for pressing down a photo mask inside 2 It is the mask case where it has the stop section 26 with 262. Body The stop section 16 of the direction of opening of 1 is the inclined plane. 162 is arranged so that it may become low gradually toward a case core. Body The stop section 16 of the direction of the back of 1 is the inclined plane. 162 is arranged so that it may become low gradually toward the direction of case opening. Lid The stop section 26 of the direction of opening of 2 is the inclined plane. 262 is arranged so that it may become low gradually toward the direction of the case back. Lid The stop section 26 of the direction of the back of 2 is the inclined plane. 262 is arranged so that it may become low gradually toward a case core. Lid It is a body when 2 is shut. The stop section 16 and the lid of 1 The stop section 26 of the direction of opening of 2 is each inclined plane. Mask case characterized by making it possible to press down from front and rear, right and left while pressing down the ridgeline part of a photo mask from the upper and lower sides by 162 and 262.

[Claim 2] Body of an abbreviation square-like mask case Inclined plane for laying a photo mask in the direction of a core a little from each corner inside 1, respectively While having the four stop sections 16 with 162 It corresponds to this and is a lid. Inclined plane for pressing down a photo mask inside 2 It is the mask case where it has the four stop sections 26 with 262. Body The two stop sections 16 of the direction of opening of 1 are the inclined plane. 162 is arranged so that it may become low gradually toward a case core, body the two stop sections 16 of the direction of the back of 1 face mutually, and are mutual -- the inclined plane 162 is arranged so that it may become low gradually toward the direction of case opening. Lid The two stop sections 26 of the direction of opening of 2 are the inclined plane. 262 is arranged so that it may become low gradually toward the direction of the case back. lid the two stop sections 26 of the direction of the back of 2 face mutually, and are mutual -- the inclined plane of the 262 is arranged so that it may become low gradually toward a case core. Lid When 2 is shut Body The stop section 16 and the lid of 1 The stop section 26 of the direction of opening of 2 is each inclined plane. Mask case according to claim 1 characterized by making it possible to press down from front and rear, right and left while pressing down the ridgeline part of a photo mask from the upper and lower sides by 162 and 262.

[Claim 3] Lid The stop section 26 of 2 is a stop section base to the direction of both ends. It has 261 and a center section is an inclined plane. Mask case according to claim 1 to 2 characterized by being the stop section 26 of the abbreviation bridge configuration which consists of 262.

[Claim 4] Lid Stop section base of the stop section 26 of 2 In 261, it has the hole with which magnitude differs, respectively, and is another side lid. The lobe from which two magnitude corresponding to said hole differs is prepared in the arrangement part of the stop section 26 of 2, and it is said stop section base. Mask case according to claim 3 characterized by enabling positioning of the arrangement part of the stop section 26 by inserting a lobe in the hole of 261.

[Claim 5] Lid Mask case according to claim 1 to 4 characterized by using for the stop section 26 of 2 PP block copolymer or urethane resin which has resiliency.

[Claim 6] Body Stop section base of the stop section 16 of 1 In 161, it has the 2 holes with which

magnitude differs, respectively. Another side body The lobe from which two magnitude corresponding to said hole differs is prepared in the arrangement part of the stop section 16 of 1. Said stop section base Mask case according to claim 1 to 5 characterized by enabling positioning of the arrangement part of the stop section 16 by inserting a lobe in the hole of 161.

[Claim 7] Body It is the connection section insertion opening 12 side of the inside of 1. Near the stop section 16 of the direction of the back It goes in the direction of the case back, and is the inclined plane of the stop section 16 gradually. Auxiliary cradle rib which has the inclination side which becomes about 162 height It has 151. In case a photo mask is pushed, it meets the inclination side, and it is the inclined plane of the stop section 16. Mask case according to claim 1 to 6 characterized by making it possible to draw the ridge-line section of a photo mask to 162.

[Claim 8] Body From the opening side of the inside of 1 to a body Inclined plane of the stop section 16 of the direction of opening of 1 This inclined plane that extended to 162 Auxiliary positioning rib a little higher than the height of 162 It has 152. While making the installation part of a photo mask controllable, it is the inclined plane of the stop section 16. It is an auxiliary positioning rib about the photo mask laid in 162 shifting to an opening side. Mask case according to claim 1 to 7 characterized by making inhibition possible by 152.

[Claim 9] Lid From the connection section insertion opening 22 side of the inside of 2 to a lid Inclined plane of the stop section 26 of the direction of the back of 2 While having the rib 24 which extended to 262, it is this inclined plane. Rib lobe a little higher than the height of 262 It has 241. Inclined plane of the stop section 26 It is a rib lobe about the photo mask laid in 262 shifting in the direction of the back. Mask case according to claim 1 to 8 characterized by making inhibition possible by 241.

[Claim 10] Lid From the opening side of the inside of 2 to a lid Inclined plane of the stop section 26 of the direction of opening of 2 While having the rib 24 which extended to 262, it is this inclined plane. Rib lobe a little higher than the height of 262 It has 241 and is the inclined plane of the stop section 26. It is a rib lobe about the photo mask laid in 262 shifting in the direction of opening. Mask case according to claim 1 to 9 characterized by making inhibition possible by 241.

[Claim 11] Body 1 and/or lid Rib which extends even in a part for the side part of the photo mask at the time of containing a photo mask from this side-face part to the both-sides side of the inside of 2 It is a rib about the photo mask laid while having 14 and 24 and making the installation part of a photo mask controllable shifting to a longitudinal direction. Mask case according to claim 1 to 10 characterized by making inhibition possible by 14 and 24.

---

[Translation done.]

**\* NOTICES \***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

3. In the drawings, any words are not translated.

---

**DETAILED DESCRIPTION**

---

**[Detailed Description of the Invention]****[0001]**

[Field of the Invention] This invention is a stop implement in which positioning installation is possible just in a case on the occasion of preservation or conveyance, does not touch the photo-mask substrate used in order to manufacture a semiconductor device, a liquid crystal display component, etc. at a photo-mask substrate front face, and relates to the mask case where it has the stop implement which can prevent breakage of a photo mask, and generating of static electricity by gap.

**[0002]**

[Description of the Prior Art] About the photo-mask substrate used in the photolithography process for manufacturing the mask substrate conventionally used by production processes, such as a semiconductor integrated circuit, for example, a semiconductor device, a liquid crystal display component, etc., the mask case which contains this on the occasion of the preservation or conveyance is used, and adhesion of dust is prevented to the photo-mask substrate. That is, a photo-mask substrate is a detailed photoengraving-process article, and since it does serious damage by adhesion of dust, it needs to prevent adhesion of the dislike and dust for all the contaminations that soil the negative of a photograph as much as possible. Moreover, it is a glass substrate, and a photo-mask substrate has a possibility that dust may adhere to a photo-mask substrate according to generating of static electricity [ in a mask case ] in friction by the gap with the mask base material which are the photo-mask substrate accompanying an impact and its stop implements in the case, such as conveyance, and dust adheres to a photoengraving-process side and it has a possibility of doing serious damage. For this reason, as a mask base material which is a stop implement for laying a photo-mask substrate in a case, it is JP,2001-301877,A. There is a thing of a configuration of being shown in Figs. 7 and 8. As for the mask base material which is this stop implement, the maintenance branch to which the maintenance branch of the internal surface of a body and a lid to a required number has the hat section to the maintenance branch or management who has the base plate section which lays a photo-mask substrate in the part of a projection lever, and has an inclination flat surface in management about this maintenance branch is specified.

**[0003]**

[Problem(s) to be Solved by the Invention] When a photo mask is put in in a mask case as mentioned above, since the dirt of the handling top photo mask of the photo-mask substrate itself is disliked extremely, it is required to avoid contact contamination as much as possible about the vertical front face of a photo mask. Therefore, JP,2001-301877,A of the above-mentioned first Although this contact surface is limited only to the hat section and the contact surface is lessened as much as possible about the maintenance branch which has the hat section to the management who shows, even if being related with this hat section, the vertical front face of a photo mask is contacted and contamination of this part is not avoided. Moreover, since it supported in respect of the hat section, when photo mask is put in and carried in a mask case, an internal photo mask is swayed and it shifts from said maintenance branch, and the dirt accompanying a gap not only adheres, but it has fear of breakage, when the contact surface of this hat section and photo mask shifts further, it is rubbed, and static electricity arises, and the dust within a case adheres on the surface of a photo mask.

[0004] Therefore, there is a possibility of doing serious damage to a photo mask. Next, JP,2001-

301877,A About the maintenance branch which has the base plate section which has an inclination flat surface in the management who shows, it will be supported at this inclination flat surface, the corner, i.e., the ridgeline, of a photo mask, and the vertical front face of a photo mask can be touched. Although a gap of the photo mask to the direction of the upper part of an inclination can be prevented when it only has an inclination flat surface and a photo mask is supported only in respect of this about this point, although it is very useful, a photo mask shifts in the direction of the lower part of an inclination simply, and a photo mask shifts in the level direction of a flat surface of an inclination flat surface, i.e., management and the direction of a perpendicular. For example, JP,2001-301877,A In the arrangement condition of the maintenance branch shown in Fig. 5, it shifts in the vertical direction on a drawing, and when shown in Fig. 6, it shifts in the direction which rotates a part for the core of a photo mask as an axis simply. When a photo mask is put in and carried in a mask case, an internal photo mask is swayed and it shifts from a maintenance branch like the above-mentioned, it has fear of breakage, and when the contact surface of this inclination flat surface and photo mask shifts further, the ridgeline part of a photo mask is rubbed, static electricity arises in a photo mask, dust adheres to a front face, and there is a possibility of doing serious damage to a photo mask.

[0005] Furthermore, in order to support a photo mask, without producing a gap in these maintenance branches, there is also a possibility that it may be required to put a very high pressure on a maintenance branch, and to press down a photo mask with a body and a lid, and it may attach a blemish to a photo mask by this. Moreover, by putting a photo mask, a possibility that a clearance may be generated is also between a body and a lid, and it also has possibility of promoting invasion of the dust into a case. Insurance was made to fix a photo mask correctly [ without shifting ] within a case as mentioned above, and things were very difficult. Insurance is made to fix this invention correctly, without solving the above-mentioned trouble and touching the vertical front face with a photo mask in view of this viewpoint, and it aims at offer of the mask case where it has the stop section which can prevent that a photo mask shifts also by the impacts at the time of conveyance etc.

[0006]

[Means for Solving the Problem] In a mask case for invention which relates to claim 1 in order to attain the above-mentioned purpose to contain the photo mask which has a body and the lid which closes opening of a body It has the stop section with the inclined plane for laying a photo mask in the internal direction of body opening and the internal direction of the back of a body. It is the mask case where it has the stop section which has an inclined plane for pressing down photo mask in the interior of the lid corresponding to these stop sections when a lid is shut. The stop section of the direction of opening of a body arranges the inclined plane so that it may become low gradually toward a case core. The stop section of the direction of the back of a body arranges the inclined plane so that it may become low gradually toward the direction of case opening. The stop section of the direction of opening of a lid arranges the inclined plane so that it may become low gradually toward the direction of the case back. The stop section of the direction of the back of a lid arranges the inclined plane so that it may become low gradually toward a case core. When a lid is shut, the stop section of a body and the stop section of the direction of opening of a lid are a mask case which makes it possible to press down from front and rear, right and left while pressing down the ridgeline part of a photo mask from the upper and lower sides by each inclined plane, and can attain said technical problem by starting invention.

[0007] Moreover, while having the four stop sections with the inclined plane for laying a photo mask in the direction of a core a little, respectively from each corner inside the body of the mask case of the shape of an abbreviation square which is invention concerning claim 2 It is the mask case where it has the four stop sections with the inclined plane for pressing down a photo mask inside a lid corresponding to this. The two stop sections of the direction of opening of a body arrange the inclined plane so that it may become low gradually toward a case core. The inclined plane is arranged so that it may become low gradually toward the direction of case opening. the two stop sections of the direction of the back of a body face mutually, and are mutual -- The two stop sections of the direction of opening of a lid arrange the inclined plane so that it may become low gradually toward the direction of the case back. The inclined plane of the is arranged so that it may become low gradually toward a case core. the two stop sections of the direction of the back of a lid face

mutually, and are mutual -- When a lid is shut, the mask case which made it possible to press down from front and rear, right and left can also attain the stop section of a body, and the stop section of the direction of opening of a lid while they press down the ridgeline part of a photo mask from the upper and lower sides by each inclined plane. Or the stop section of the lid which is invention concerning claim 3 may be a mask case which is the stop section of the abbreviation bridge configuration where have a stop section base in the direction of both ends, and a center section consists of an inclined plane.

[0008] Furthermore, you may be the mask case which enabled positioning of the arrangement part of the stop section by having the hole with which magnitude differs, respectively in the stop section base of the stop section of the lid which is invention concerning claim 4, preparing the lobe from which two magnitude corresponding to said hole differs in the arrangement part of the stop section of an another side lid, and inserting a lobe in the hole of said stop section base. In addition, it is the same also in the mask case using PP block copolymer or urethane resin which has resiliency in the stop section of the lid which is invention concerning claim 5. Moreover, the mask case which enabled positioning of the arrangement part of the stop section is sufficient by having the 2 holes with which magnitude differs, respectively in the stop section base of the stop section of the body which is invention concerning claim 6, preparing the lobe from which two magnitude corresponding to said hole differs in the arrangement part of the stop section of an another side body, and inserting a lobe in the hole of said stop section base. Moreover, in case it has the auxiliary cradle rib which has the inclination side which is the connection section insertion opening side of the inside of a body like invention concerning claim 7, and becomes the height of inclined plane extent of the stop section gradually toward the direction of the case back near the stop section of the direction of the back and a photo mask pushes, the mask case which made it possible to meet the inclination side and to draw the ridgeline section of a photo mask to the inclined plane of the stop section is sufficient.

[0009] In addition, while having an auxiliary positioning rib a little higher than the height of this inclined plane that extended like invention concerning claim 8 from the opening side of the inside of a body to the inclined plane of the stop section of the direction of opening of a body and making the installation part of a photo mask controllable, it is the same also in the mask case which enabled inhibition of the photo mask laid in the inclined plane of the stop section shifting to an opening side with the auxiliary positioning rib. Or the mask case which enabled inhibition of the photo mask which has a rib lobe a little higher than the height of this inclined plane while having the rib which extended like invention concerning claim 9 from the connection section insertion opening side of the inside of a lid to the inclined plane of the stop section of the direction of the back of a lid, and was laid in the inclined plane of the stop section shifting in the direction of the back by the rib lobe is sufficient. In addition, the mask case which enabled inhibition of the photo mask which has a rib lobe a little higher than the height of this inclined plane while having the rib which extended like invention concerning claim 10 from the opening side of the inside of a lid to the inclined plane of the stop section of the direction of opening of a lid, and was laid in the inclined plane of the stop section shifting in the direction of opening by the rib lobe is sufficient. Furthermore, the mask case which enabled with the rib inhibition of the photo mask laid in it like invention concerning claim 11 while having the rib which extends even in a part for the side part of the photo mask at the time of containing a photo mask from this side-face part in the both-sides side of the inside of a body and/or a lid and making the installation part of a photo mask it controllable shifting to a longitudinal direction is sufficient.

[0010]

[Embodiment of the Invention] Drawing 1 is the body of the mask [ are drawing and ] case based on the shape of an abbreviation square which shows the condition of 1 operation of the mask case of the photo mask concerning this invention. It is the lid of the mask case of a wrap sake about opening of 1 and this body. It consists of 2. Body It is a lid about 1. A mask case can be closed by covering by 2. This body It is a lid about 1. Body applicable to a joint when 2 closes The opening periphery 11 and lid of 1 The opening periphery 21 of 2 is a protrusion wall, respectively. It has 110 and 210, and by inserting these in mutually, it becomes pillbox doubling and the degree of the seal at the time of closing is raised. Next, body 1 and lid 2 forms both successively, and uses both as the hinge part which can be bent free [ closing motion ], and is the connection section. It is formed successively by

3. This connection section 3 is a body. 1 and lid Two connection section insertion openings It consists of a hinge configuration which has the tongue-shaped piece section 32 inserted in 12 and 22 to the both ends of the connection section body 31 of the letter of the abbreviation for U characters, and has the contact segment 35, respectively in the tongue-shaped piece section 32 by the side of opening of the U character-like connection section body 31. This contact segment 35 is a contact side face which is the 1 side side of a contact segment 35, maintaining opening of the U character-like connection section body 31, when each tongue-shaped piece section 32 is made into a level condition. 351 comrades will be in a contact condition.

[0011] Therefore, it is the connection section where this contact segment 35 is turned in the direction of the interior of a case. It is a body about each tongue-shaped piece section 32 of 3, respectively. 1 and lid Two connection section insertion openings It can insert in 12 and 22. Body 1 and lid When it changes into the condition of having closed 2, the tongue-shaped piece section 32 is level as mentioned above, and it is the contact side face of a contact segment 35. 351 comrades will be in a contact condition and can raise whenever [ seal / of this part ]. next, lid from such a condition 2 -- \*\*\*\* -- in a case, the part of the U character-like connection section body 31 bends the bottom, and \*\*\*\* is made possible. Such the connection section The location which arranged 3, and body which is the opposite direction 1 and lid It sets into the \*\*\*\* part of 2 and is a body. 1 and lid Two crevices It has 13 and 23 and is this crevice. It is a closing slider in 13 and 23. It has 4. By carrying out movable [ of closing slider 4 ], this insert lump is canceled and it is a lid. 4 is a body. Horizontal level of 1 130 and piece of a protrusion flow It is a closing slider while having regulated the movable direction by the 131st grade. 4 is a lid. Two closing blocks It is a body by putting the 231st grade. 1 and lid 2 is stopped, a lock is made possible and, on the other hand, it is this closing slider. \*\*\*\* of 2 is made possible. Such a closing slider 4 is a body. 1 and lid Crevise prepared towards each direction of the interior of 2 It is arranged in 13 and 23 and is a closing slider. It is a body where 4 is arranged. 1 and lid From the outside surface of 2 to a closing slider 4 is arranged in the condition of not projecting outside.

[0012] It is the connection section as mentioned above. 3 and closing slider 4 is the body of a mask case, respectively while being mostly located on the same flat surface with the periphery side face of this mask case. 1 and lid After making the joint of 2 into pillbox doubling, it can carry out on the same line. When it follows, for example, adhesive tape is wound around this part, it is the body of a mask case. 1 and lid The joint of 2 can be made the same line top, and all can be twisted as a flat surface, sealing performance can be maintained very highly, and invasion of the dust into a case can be prevented by the very high probability. In addition, the need is accepted and it is a body. 1 and lid Packing etc. may be arranged in the doubling part of 2. Next, body The rib 14 is formed in the side face of the inner skin 1, and it is a lid. It has the rib 24 on the side face of the inner skin also like 2. Thereby, deformation of a case is prevented and it is a body. 1 and lid A gap of the joint accompanying deformation of 2 can be prevented, and generating of both gap can be prevented, and they are a body 1 and a lid. It makes it possible to increase the reinforcement of 2. Collectively, it is this rib. Rib arranged in the both-sides side part of 14 or 24 inner mask cases 14 and 24 have extended to near the both-sides side of a photo mask, in order to prevent a gap of a lateral photo mask, when a photo mask is contained.

[0013] it is shown especially in drawing -- as -- lid the interior of the case of 2 -- lid the rib projected from the pars basilaris ossis occipitalis to opening to the peripheral surface inside 2 -- having -- \*\*\*\* -- lid it was prepared in the periphery edge 21 of 2 -- projecting -- wall It has the positioning rib 25 which had and set up the clearance among 210. This is a lid. It is a body when 2 is put. Protrusion wall prepared in the inner circumference edge 11 of 1 110 and lid Protrusion wall prepared in the periphery edge 21 of 2 It is for preventing a gap of pillbox doubling by 210, and is a body. Protrusion wall of the inner circumference edge of 1 110 prevented shifting in the direction of the interior of a case, and falling, and has prevented the gap of pillbox doubling. Next, body There is the stop section 16 for laying four photo masks in the direction of a core a little from each corner of an abbreviation square-like case, respectively, and stopping inside 1, a photo mask is laid and positioned into this part, and receipt is made possible into the case. This stop section 16 is a stop section base. It is a slanting slope to the top-face section in contact with 161 and a photo mask. It has 162 and is this inclined plane. It is positioned by contacting in 162 the ridgeline part which is the

corner of the side side by the side of the inferior surface of tongue of a photo mask. In this case, the inside of the stop section 16, a body The two stop sections 16 located in the crevice 13 side of 1 The slanting slope Low edge 162a of the inclination of 162 is a body. It is in the direction of the inside of 1. High edge 162b is a body. It is in the direction of an outside of 1, and is a slanting slope. The inclination of 162 is a body. It is arranged, respectively so that the edge of the direction of an outside may be made high in parallel the side side by the side of the crevice 13 of 1 and it may become low toward the direction of the inside gradually.

[0014] Moreover, the inside of the stop section 16, a body The two stop sections 16 located in the connection section insertion opening 12 side of 1 The slanting slope Low edge 162a of the inclination of 162 is a body. It is in the direction of the inside of 1. High edge 162b is a body. It is in the direction of an outside of 1, and is a slanting slope. The inclination of 162 is a body. It is arranged, respectively so that the edge of the direction of an outside may be made high in parallel the both-sides side without the crevice 13 of 1, and the connection section insertion opening 12 and it may become low toward the direction of the inside gradually. In addition, inclined plane of these stop sections 16 Stop section base supporting 162 161 has the fixed height for maintaining the height which should lay a photo mask. Therefore, Body It is a body when laying a photo mask in one. When a photo mask is inserted from the opening part by the side of the crevice 13 of 1 Body Inclined plane of the two stop sections 16 located in the connection section insertion opening 12 side of 1 The inclination of 162 Body Since the back side of 1 is high and the opening side is low, the ridgeline part which is the corner of the side side by the side of the inferior surface of tongue by the side of the supplies-of-provisions back of a photo mask This inclined plane It is stopped by 162 in an orientation, a photo mask is stopped in an installation location, and it is a body. It can prevent pushing on the back side of 1 more than fixed, and a gap of the supplies-of-provisions direction of a photo mask can be prevented.

[0015] It is in this condition, the near side, i.e., the body, of a photo mask. When the edge located in the opening side of 1 is lowered and a photo mask is laid in the stop section 16 This body Slanting slope of the two stop sections 16 located in the crevice 13 side of 1 The inclination of 162 Body The both-sides side side of 1 is high, and it is a body. From the interior side of 1 being low The ridgeline part which is the corner of the side side by the side of the inferior surface of tongue of the both-sides section of a photo mask is this inclined plane. It will be laid in 162, the presser foot from the longitudinal direction of a photo mask can be performed, and a gap of a longitudinal direction can be prevented to the supplies-of-provisions direction of a photo mask. Inclined plane of these stop sections 16 162 does not contact the front face of the vertical side of a photo mask, does not contact the so-called ridgeline part, and does not soil the field of a photo mask by contact. Moreover, body Inclined plane of the two stop sections 16 of the direction of the back of 1 The direction of the inclination of 162, Body Inclined plane of the two stop sections 16 of the direction of opening of 1 The direction of the inclination of 162 While being the so-called direction which counters, and both being suitable in the crossover direction and enabling installation of a photo mask in an orientation, even if it can prevent a gap and faces receipt of a photo mask, also when it shifts from an orientation a little and contains, correction stationing in an orientation is attained easily.

[0016] In addition, inclined plane of the stop section 16 As for 162, it is desirable to be constituted by the olefins used abundantly in semi-conductor relation. Moreover, these stop sections 16 are bodies. Although really arranged in 1 with shaping, it has a lobe from others, for example, a body, and it is a stop section base to this. It has in 161 the hole which fits into this lobe, and is an inclined plane. Stop section base of the stop section 16 which has 162 It is a body by fitting said lobe into the hole of 161. You may attach in 1. For example, stop section base If it has two holes in 161 and has two lobes which suit this on the body 1, it is an inclined plane at the time of arrangement. Regulation of the direction of 162 is enabled easily. Moreover, body It is between the two stop sections 16 located in the connection section insertion opening 12 side of 1, and is a body a little. It is an auxiliary cradle rib to the direction of 1 core. It has 151. This is a body. The direction of opening of 1 is the auxiliary cradle rib which is high and inclined as it was low and went to the back. It is 151.

[0017] Therefore, it is a body about a photo mask. In order to contain to 1, it is a body from opening. When placing toward the stop section 16 by the side of the connection section insertion opening 12 of 1, the ridgeline part of the inferior surface of tongue of the direction of the back of a photo mask is

this auxiliary cradle rib. 151 is met and it is a body. Direction regulation at the time of pushing in the direction of the back of 1 is enabled. When it has especially the inclination and a photo mask is pushed along with the auxiliary cradle rib 15, it is the inclined plane of the stop section 16 gradually. It can reach to near the height of 162 and the inclined plane 162 of the stop section 16 can be contacted as it is. Therefore, the facilities in the case of installation of a photo mask can be given, and it can fix just in an orientation. In addition, auxiliary cradle rib Since the opening side is low, 151 will not contact a photo mask any longer, if a photo mask is laid in the four stop sections 26. Moreover, body In the direction of opening of 1, it is an auxiliary positioning rib. When it has 152 and lays a photo mask in the stop section 16, it is for leading a photo mask even to an orientation. [0018] That is, when it is going to lay a photo mask in the stop section 16 in the condition of not attaining a photo mask to the orientation by the side of the back, it is the auxiliary positioning rib of the direction of opening. When 152 becomes obstructive, a photo mask does not ride on the stop section 16 of the direction of opening and a photo mask is led even to an orientation, it is already an auxiliary positioning rib. 152 does not become obstructive but installation of it is attained at the stop section 16 of said direction of the regio oralis. Therefore, auxiliary positioning rib 152 should just be arranged in the direction of opening rather than the fixed part of a photo mask. Next, lid It has also inside 2 the stop section 26 for stopping the photo mask laid a little four places in the direction of a core, respectively from each corner of an abbreviation square-like case. These stop sections 26 are bodies, respectively. It is arranged by the stop section 16 of 1, and the corresponding part, and is a body. A photo mask is laid on the stop section 16 of 1, and it is a lid. Lid of the location corresponding to each stop section 16 when 2 is shut It is pressed down by the stop section 26 of 2. This stop section 26 is a stop section base. It is a slanting slope about the field in contact with 261 and a photo mask. It consists of 262 and is a lid. The ridgeline part which is the corner of the side side by the side of the top face of a photo mask when 2 is shut is the inclined plane of this lid stop section 26. It is contacted by 262 and pressed down in the direction of a lower part from the upper part.

[0019] In this case, the inside of the stop section 26, a lid The two stop sections 26 located in the crevice 23 side of 2 are that slanting slope. Low edge 262a of the inclination of 262 is a lid. It is in the direction of the inside of 2, and high edge 262b is a lid. It is in the direction of an outside of 2, and is a slanting slope. The inclination of 262 is a lid. It is arranged in parallel the both-sides side without the crevice 23 of 2, and the connection section insertion opening 22. Moreover, the inside of the stop section 26, a lid The two stop sections 26 located in the connection section insertion opening 22 side of 2 are the slanting slope. Low edge 262a of the inclination of 262 is a lid. It is in the direction of the inside of 2, and high edge 262b is a lid. It is in the direction of an outside of 2, and is a slanting slope. The inclination of 262 is a lid. It meets in parallel the side side by the side of the connection section insertion opening 22 of 2, and be arranged In addition, inclined plane of these stop sections 26 Stop section base supporting 262 261 has fixed height in order to maintain the height for pressing down a photo mask in an orientation. Therefore, body A photo mask is laid in one and it is a lid. When 2 is shut, the two stop sections 26 located in the back 22, i.e., connection section insertion opening, side of a case It is this inclined plane about the ridgeline part which that inclined plane is made low towards the inside of the longitudinal direction of a case, and is the corner of the both-sides side by the side of the top face of the both-sides side of the supplies-of-provisions direction of a photo mask. It can contact by 262 and the presser foot from [ of the supplies-of-provisions direction of a photo mask ] both sides can be performed. Moreover, [0020] of the side side by the side of the top face by the side of case opening which is the supplies-of-provisions near side of a photo mask The ridgeline part which is a corner is a lid. Inclined plane of the two stop sections 26 located in the crevice 23 side of 2 The inclination of 262 contacts. This stop section 26 is a lid. It is becoming low gradually towards the direction of a core of 2, the direction of a case core becomes [ a case opening side ] high low, and it is an inclined plane to the both sides of a case, and parallel. It is this inclined plane about the ridgeline part which 262 is turned, and that inclined plane is made low, the lengthwise direction of the back, i.e., direction, of a case, and is the corner of the both-sides side by the side of the top face of the both-sides side of the supplies-of-provisions direction of a photo mask. It contacts by 262 and a gap in the direction of opening can be prevented. In addition, inclined plane of the stop section 26 262 may be constituted by a thing, urethane resin,

etc. which consist of a PP block copolymer in order to press down with resiliency besides the olefins used abundantly in semi-conductor relation. This stop section 26 is a stop section base. It is an inclined plane to 261. It is a stop section base about a part for the others [ configuration ] which have 262, for example, both ends. It is referred to as 261 and is an inclined plane about that interstitial segment. You may be the stop section 26 of the shape of a bridge set to 262. It is [ the member which has resiliency, or ] a lid by giving resiliency as the shape of a bridge, while /Being fastidious. When 2 is shut, it can press down a photo mask with elasticity, and it not only can prevent what attaches a blemish to a photo mask, but it can aim at prevention of a gap.

[0021] Moreover, these stop sections 26 are lids. Although really arranged in 2 with shaping, it has a lobe from others, for example, a body, and it is a stop section base to this. It has in 261 the hole which fits into this lobe, and is an inclined plane. Stop section base of the stop section 26 which has 262 It is a lid by fitting said lobe into the hole of 261. You may attach in 2. For example, it is a stop section base to both ends. It is a lid about two lobes which have 261, have a hole in each and suit this. If had in 2, it is an inclined plane at the time of arrangement. Regulation of the direction of 262 is enabled easily. According to the sense which wishes a predetermined inclination, it can insert by changing the configuration of two lobes, die length, magnitude, etc. a configuration, the depth, magnitude of said two holes, etc. especially. Moreover, lid It is between the two stop sections 26 located in the connection section insertion opening 22 side of 2, and is a lid little. It is a lid while having the rib 24 to the connection section insertion opening 22 of 2. It is between the two stop sections 26 located in the crevice 23 side of 2, and is a lid a little. It has the rib 24 in the crevice 23 side of 2 \*\*\*, it combines, and is a rib lobe in these ribs. It has 241. These ribs 24 and rib lobe It is a presser foot for 241 to abolish that a photo mask shifts, when SUKUROKU of a flexible presser foot of the stop section 26 has been exceeded in response to a big impact in the handling top case, although a photo mask does not usually contact.

[0022] As mentioned above, body The stop section 16 and the lid of 1 The stop section 26 of 2 is arranged corresponding to each, by carrying out clip \*\*\*\* from the upper and lower sides, pressed down the ridgeline part which is the corner of the vertical side of a photo mask, and has prevented positioning and the gap at the time of receipt of a photo mask. In this case, body 1 and lid The stop section 16 and the stop section 26 which 2 has countered have turned that inclined plane in the crossover direction, respectively, and will hold it down from a four way type by each ridgeline section of the vertical side of a photo mask. Furthermore, it is an auxiliary positioning rib 152 and rib lobe Even when really shocked by 241, the so-called gap prevention measure of the two-step style which can press down a gap of a photo mask to the minimum is taken. As mentioned above, body It is a lid after carrying out positioning installation of the photo mask into one. When 2 is shut, the ridgeline part of the corner of the side side by the side of the top face of a photo mask is the inclined plane of this lid stop section 26. It will be contacted by 262, and will be pressed down in the direction of a lower part from the upper part, and a photo mask can be fixed by the quiescent state. Furthermore, it is a body. 1 and lid The stop section 16 and the stop section 26 which 2 has countered can be contained in a mask case, without holding down the inclined plane from a four way type by each ridgeline section of the vertical side of a photo mask toward the crossover direction, respectively, and a photo mask shifting.

[0023] Moreover, since the stop section 26 presses down a photo mask with elasticity, while being able to press down a gap of a photo mask further, breakage of a photo mask can also be prevented. Moreover, only the ridgeline part which is the corner of a photo mask is each stop section. It can lay without contacting 16 and 26 and touching the photo mask itself. Static electricity produced by gap of the photo mask within a case can be prevented by these, and while being able to prevent that unnecessary dust adheres to a photo mask, the dirt on the front face of a photo mask by contact of each stop section can be prevented. It can combine and breakage of the photo mask by gap of a photo mask etc. can fully be prevented in the handling top of a mask case. In addition, even if it is the case where the material which coated the mask case itself with the conductive resin for the electrification prevention which prevents producing static electricity is used, the acrylic resin which blended the high conductive rubber of the antistatic effectiveness may be used. Static electricity produced in the case itself by this is prevented, and it can prevent making dust adhere to a case superfluously.

Drawing 2 is drawing showing an example of the conventional example, and is a body. 7 and lid 8 is

formed successively by each vane 901 of a hinge 90, and it is a body. When it lids with the body side stop block 71 established at the tip of the plate projected and formed from the opening periphery of 7, it is the configuration engaged by the stop slider 95 in the lid side stop block 81 joined to this. [0024] Therefore, this stop slider 95 is a lid. It is located in the direction of the upper part of 8, and is projected and formed in the case exterior. When adhesive tape is wound around this part, the part of the stop slider 95 will rise, and a clearance will be generated. Moreover, when this part is shifted and only the part below this stop slider 95 is wound with adhesive tape, a clearance will be left without winding adhesive tape between the circumference of the body side stop block 71 by which protrusion formation was carried out, and the lid side stop block 81, and dust will go into the interior of a case from this part. Moreover, body In 7, it has the stop section 75, and all are inclined planes. Although these are all inclinations which become [ of a case ] low toward the case core which is the inside gradually from the both-sides side although it has 751, and a motion of a longitudinal direction can be controlled to some extent, it is close to a gap of a lengthwise direction powerless. Furthermore, it is a lid. In 8, it has the stop section 85 of a \*\*\*\* configuration, and has the hat section at the tip of this stop section 85. Therefore, when a lid is shut, this hat section touches on the top-face from face of a photo mask, and a photo mask is pressed down. This is very brittle, when pressing down by one for a point of the hat section and pressing down a gap of a photo mask, while touching on the surface of a photo mask.

[0025] Furthermore, when the force is applied to this part too much, fear, such as breakage of a photo mask, is also produced. Drawing 3 is the lid of this mask case. It is drawing showing the condition of having opened 2. It is a body as shown in this Fig. It is arranged in parallel the side side by the side of a crevice 13, and the two stop sections 16 located in the crevice 13 side of 1 are bodies. The both-sides side [ the two stop sections 16 located in the connection section insertion opening 12 side of 1 ] without a crevice 23 and the connection section insertion opening 22, i.e., arranged [ of the case ] in parallel with the direction of the back from opening. Furthermore, lid The two stop sections 26 located in the crevice 23 side of 2 are lids. It is arranged in parallel the both-sides side without the crevice 23 of 2, and the connection section insertion opening 22. Moreover, lid The two stop sections 26 located in the connection section insertion opening 22 side of 2 are lids. It meets in parallel the side side by the side of the connection section insertion opening 22 of 2, and is arranged. Therefore, lid It is a body when 2 is shut. Lid corresponding to the stop section 16 of 1, and this The stop section 26 of 2 is suitable in the direction which crosses, respectively, and can press down a photo mask from a four way type further only not only in a vertical side. Drawing 4 is a body. Stop section base which is drawing showing an example of the stop section 16 of 1, and connected and constituted the leg of the shape of two cylindrical shape from an articulated section 161 and inclined plane It consists of 162. This inclined plane The ridgeline section of a photo mask touches 162. In addition, stop section base In the leg of the two shape of a cylindrical shape of 161, it has the hole with which width of face differs, respectively.

[0026] Body It is a body about this stop section 16 by preparing two lobes from which a size differs, respectively in 1, and inserting this lobe in said hole. It can arrange in 1. For example, by preparing two lobes from which a size differs in this appearance, \*\* it does not mistake the installation direction of this stop implement 16, it can carry out easily. Drawing 5 is a lid. It is drawing showing an example of the stop section 26 of 2, and is a stop section base about a part for both ends. It is referred to as 261 and is an inclined plane about the interstitial segment. The stop section 26 of the shape of an abbreviation bridge set to 262 is shown. A part for both ends is a stop section base. It is connected by articulated section material so that 261 may not open. Therefore, this inclined plane The ridgeline section of a photo mask touches in 262. It is especially a stop section base. It is an inclined plane among 261. This inclined plane since it has 262 262 will have elasticity and can oppress a photo mask. Moreover, two stop section bases In 261, it has the hole with which width of face differs, respectively. Lid It is a lid about this stop implement 26 by preparing two lobes from which a size differs, respectively in 2, and inserting this lobe in said hole. It can arrange in 2. By making it this appearance, like the above-mentioned, \*\* it does not mistake the installation direction of this stop implement 26, it can carry out easily.

[0027]

[Effect of the Invention] The mask case concerning 1 and this invention has an inclined plane also in

the stop section of a lid while changing the sense of the inclination of the direction of case opening, and the direction of the back by the stop section which has the inclined plane of a body. It constitutes so that the inclined plane of both stop section may cross, when a lid is closed. About a body, the inclined plane of the stop section of the direction of opening is considered as the inclination of a longitudinal direction. The inclined plane of the stop section of the direction of the back is made to incline low gradually in the direction of opening from a cross direction, i.e., the back. By making the inclined plane of the stop section of the direction of opening incline low gradually toward the direction of the back about a lid from opening, and considering the inclined plane of the stop section of the direction of the back as the inclination of a longitudinal direction The photo mask put will be pressed down from front and rear, right and left besides the vertical direction. A gap of the photo mask at the time of receipt is lost, static electricity produced from friction by the gap generated between a stop implement and a photo mask can be prevented, and it has the first effectiveness that adhesion of dust can be prevented to a photo mask.

[0028] Moreover, since a gap is lost, it is useful also to prevention of breakage of a photo mask. Since 2 and a photo mask touch in the inclined plane of the stop section of a body and a lid and it contacts only in the ridgeline part of a photo mask, the stop section does not contact the front face of the vertical side of a photo mask, but it has the second effectiveness of not soiling the front face of a photo mask.

By making the stop section by the side of 3 and a lid into the shape of so-called bridge, it can have elasticity and a photo mask can be pressed down, and while being able to prevent a gap of a photo mask effectively, it has the third effectiveness that breakage of a photo mask can be prevented. It has the fourth effectiveness that positioning at the time of wearing of a photo mask can be made correctly and easy, with 4 and an auxiliary cradle rib.

Even when a big impact is given to a mask case about the photo mask contained with 5, the auxiliary positioning rib, the rib lobe, and the rib, it has the fifth effectiveness that a gap of a photo mask can be prevented. Moreover, it is utility even if it faces positioning at the time of receipt of a photo mask.

---

[Translation done.]

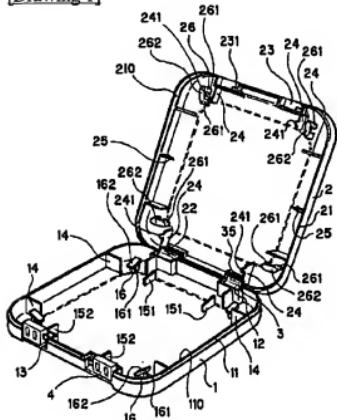
\* NOTICES \*

JPO and NCIPPI are not responsible for any damages caused by the use of this translation.

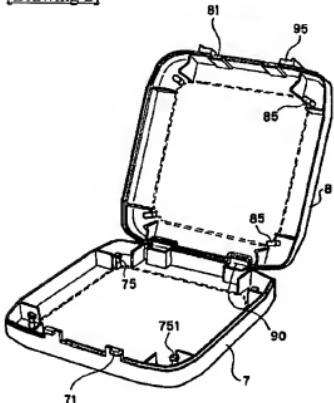
- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

## DRAWINGS

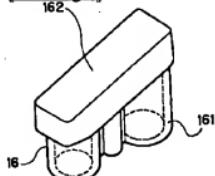
## [Drawing 1]



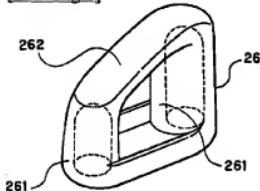
### [Drawing 2]



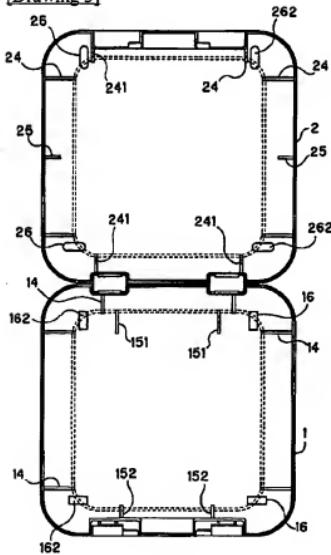
[Drawing 4]



[Drawing 5]



[Drawing 3]



---

[Translation done.]

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2003-222992  
 (43)Date of publication of application : 08.08.2003

(51)Int.CL

 G03F 1/14  
 B65D 6/02  
 B65D 85/86  
 H01L 21/68

(21)Application number : 2002-024007

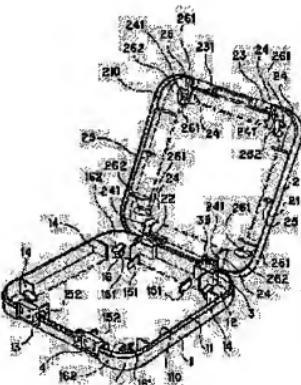
(71)Applicant : ARAKAWA JUSHEKK

(22)Date of filing : 31.01.2002

(72)Inventor : SAITO SHINSAKU  
 OTSUKA CHUZABURO**(54) MASK CASE****(57)Abstract:**

**PROBLEM TO BE SOLVED:** To eliminate dust stuck to a photomask caused by static electricity developed by the displacement of the photomask in housing the photomask in a mask case and to prevent damage to the photomask and to eliminate the displacement of the photomask housed in the mask case.

**SOLUTION:** A locking section in the opening portion direction of the main body of the mask case for housing the photomask is disposed in such a way that the locking section may gradually be lowered toward a center portion. A locking section in the depth direction is disposed in such a way that the locking section may gradually be lowered toward the opening portion direction of the case. On the other hand, a locking section in the opening portion direction of a cover is disposed in such a way that the locking section may gradually be lowered toward the depth direction of the case. A locking section in the depth direction of the cover is disposed in such a way that the locking section may gradually be lowered toward the center portion of the case. When the cover is closed, the locking section of the main body and the locking section in the opening portion direction of the cover press the ridge line portion of the mask at respective inclined surfaces from all the right and left directions as well as from the up and down directions.



**BEST AVAILABLE COPY**

**LEGAL STATUS**

[Date of request for examination] 26.02.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 轉跌出現公關發昌

時間2002-2003

RECORDED BY  
(R2003-222002A)

(43) 公開日 平成15年8月8日(2003.8.8)

| (51)Int.Cl. <sup>1</sup> | 識別記号  | F I     | マークコード <sup>2</sup> (参考) |
|--------------------------|-------|---------|--------------------------|
| G 0 3 F                  | 1/14  | G 0 3 F | M 2 H 0 9 5              |
| B 6 5 D                  | 6/02  | B 6 5 D | 3 E 0 6 1                |
|                          | 85/86 | H 0 1 L | T 3 E 0 9 6              |
| H 0 1 L                  | 21/68 | B 6 5 D | R 5 F 0 3 1              |
|                          |       | 85/38   |                          |

審査請求 杰出請求 請求項の数川 01 (全 10 頁)

(21) 出圖番號 錄圖2002-24007(P2002-24007)

(71) 展開 E06120010

株式会社荒川樹脂

(22) 出願日 平成14年1月31日(2002.1.31)

(72)發明者 李曉 李作

東京都荒川区荒川5丁目39番2号 株式会社  
新善光樹脂

第五單元 本來的歌詞

(74) 代理人 100008198

參照書 目 雜誌 (第 1 冊)

新嘉坡 三 聖 會

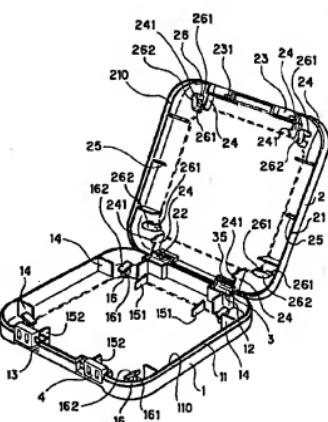
最終頁

(54) 「登場の名前」 マスクケーブ

(57) [要約]

【課題】マスクケースに収納したフォトマスクのずれをなくすことを課題とし、収納時のフォトマスクのずれにより生じる静電気によってフォトマスクに付着する塵をなくすと共にフォトマスクの破損を防止することを課題とする。

【解決手段】 係る課題を解決するためフォトマスクを収納するためのマスクケースの本体の開口部方向の係止部は中心部に向かって徐々に低くなるように配設し、奥方向の係止部はケース開口部方向に向かって徐々に低くなるように配設し、他方蓋体の開口部方向の係止部はケース奥方向に向かって徐々に低くなるように配設し、蓋体の奥方向の係止部はケース中心部に向かって徐々に低くなるように配設し、蓋体を中心部に低くなる場合に係止部と蓋体の開口部方向の係止部はそれぞれの傾斜面によりマスクの稜線部分を上下方向と共に前後左右方向から押す事により達成できる。



## 〔特許請求の範囲〕

【請求項1】 本体1と本体の開口部を閉鎖する蓋体2とを有するフォトマスクを収納するためのマスクケースにおいて、

本体1の内部の本体開口部方向及び奥方向にフォトマスクを載置するための傾斜面162のある係止部16を有し、蓋体2を開めた場合にこれらの係止部16Cに対応する蓋体2の内部にフォトマスクを押えるための傾斜面262のある係止部26を有するマスクケースであって、

本体1の開口部方向の係止部16はその傾斜面162をケース中心部に向かって徐々に低くなるように配設し、

本体1の奥方向の係止部16はその傾斜面162をケース開口部方向に向かって徐々に低くなるように配設し、

蓋体2の開口部方向の係止部26はその傾斜面262をケース奥方向に向かって徐々に低くなるように配設し、

蓋体2の奥方向の係止部26はその傾斜面262をケース中心部に向かって徐々に低くなるように配設し、

蓋体2を開めた場合に、本体1の係止部16と蓋体2の開口部方向の係止部26はそれぞれの傾斜面162、262によりフォトマスクの稜線部分を上下方向から押えると共に前後左右方向から押えることを可能としたことを特徴とするマスクケース。

【請求項2】 略四角形状のマスクケースの本体1の内部のそれらの角部からやや中心部方向に向かってフォトマスクを載置するための傾斜面162のある係止部16を4つ有すると共にこれに對応して蓋体2の内部にフォトマスクを押えるための傾斜面262のある係止部26を4つ有するマスクケースであって、

本体1の開口部方向の二つの係止部16はその傾斜面162をケース中心部に向かって徐々に低くなるように配設し、

本体1の奥方向の二つの係止部16は互いに向き合い、お互いその傾斜面162をケース開口部方向に向かって徐々に低くなるように配設し、

蓋体2の開口部方向の二つの係止部26はその傾斜面262をケース奥方向に向かって徐々に低くなるように配設し、

蓋体2の奥方向の二つの係止部26は互いに向き合い、お互いその傾斜面262をケース中心部に向かって徐々に低くなるように配設し、

蓋体2を開めた場合に、本体1の係止部16と蓋体2の開口部方向の係止部26はそれぞれの傾斜面162、262によりフォトマスクの稜線部分を上下方向から押えると共に前後左右方向から押えることを可能としたことを特徴とする請求項1に記載のマスクケース。

【請求項3】 蓋体2の係止部26はその両端部方向に係止部基部261を有し、中央部が傾斜面262よりもなる略パリッジ形状の係止部26であることを特徴とする請求項1乃至2のいずれかに記載のマスクケース。

【請求項4】 蓋体2の係止部26の係止部基部261には

それそれ大きさの異なる孔を有し、他方蓋体2の係止部26の配設箇所に前記孔に対応する二つの大きさの異なる突出部を設け、前記係止部基部261の孔に突出部を嵌入することにより係止部26の配設箇所の位置決めを可能としたことを特徴とする請求項3に記載のマスクケース。

【請求項5】 蓋体2の係止部26に弾力性を有するPP

プロック共重合体又はウレタン樹脂を用いたことを特徴とする請求項1乃至4のいずれかに記載のマスクケース。

【請求項6】 本体1の係止部16の係止部基部161にはそれぞれ大きさの異なる二つ孔を有し、他方本体1の係止部16の配設箇所に前記孔に対応する二つの大きさの異なる突出部を設け、前記係止部基部161の孔に突出部を嵌入することにより係止部16の配設箇所の位置決めを可能としたことを特徴とする請求項1乃至5のいずれかに記載のマスクケース。

【請求項7】 本体1の内面の連結部押入口12側であって奥方向の係止部16の近傍に、ケース奥方向に向かって徐々に係止部16の傾斜面162程度の高さになる傾斜辺を

有する補助受け台リブ151を有し、フォトマスクを押し入れる際に傾斜辺にそって係止部16の傾斜面162迄フォトマスクの稜線部を導くことを可能としたことを特徴とする請求項1乃至6のいずれかに記載のマスクケース。

【請求項8】 本体1の内面の開口部側から、本体1の開口部方向の係止部16の傾斜面162を延長した該傾斜面162の高さよりやや高い補助位置決めリブ152を有し、フォトマスクの載置箇所を規制可能と共に係止部16の傾斜面162に載置したフォトマスクが開口部側に削ることを補助位置決めリブ152より阻止可能としたことを特徴とする請求項1乃至7のいずれかに記載のマスクケース。

【請求項9】 蓋体2の内面の連結部焯入口22側から、蓋体2の奥方向の係止部26の傾斜面262を延長したリブ24を有していると共に該傾斜面262の高さよりやや高いリブ突出部241を有し、係止部26の傾斜面262に載置したフォトマスクが奥方向にずれることをリブ突出部241により阻止可能としたことを特徴とする請求項1乃至8のいずれかに記載のマスクケース。

【請求項10】 蓋体2の内面の開口部側から、蓋体2の開口部方向の係止部26の傾斜面262を延長したリブ24を有していると共に該傾斜面262の高さよりやや高いリブ突出部241を有し、係止部26の傾斜面262に載置したフォトマスクが開口部方向にずれることをリブ突出部241により阻止可能としたことを特徴とする請求項1乃至9のいずれかに記載のマスクケース。

【請求項11】 本体1及び/又は蓋体2の内面の両側面に、該側面部分からフォトマスクを収納した際のフォトマスクの側辺部分にまで延在するリブ14,24を有し、

フォトマスクの載置箇所を規制可能するとと共に載置したフォトマスクが横方向にずれることをリブ14,24により阻止可能としたことを特徴とする請求項1乃至10のいずれかに記載のマスクケース。

【発明の詳細な説明】

[0001]

【発明の属する技術分野】本発明は、半導体素子や液晶表示素子等を製造するために用いられるフォトマスク基板を保存又は運搬に際してケース内にきっちりと位置決め載置可能な係具であって、フォトマスク基板表面に触れることがなく、フォトマスクの破損やすれによる静電気の発生を防止可能な係具を有するマスクケースに関する。

[0002]

【從来技術】從来より半導体集積回路等の製造工程で用いられているマスク基板、例えば半導体素子や液晶表示素子等を製造するためのフォトリソグラフィ工程等において用いられるフォトマスク基板に関しては、その保存又は運搬に際してこれを収納するマスクケースが用いられており、フォトマスク基板に座敷の付着を防止しているものである。即ち、フォトマスク基板は微細な写真製版品であり、座敷の付着により重大な損傷を与えることから写真の原板を汚す一切の汚染物を嫌い、座敷の付着を極力防ぐことが必要である。また、フォトマスク基板はガラス基板であり、マスクケース内において運搬等の際の衝撃に伴うフォトマスク基板とその係具であるマスク支持体とのずれによる摩擦で静電気の発生により座敷がフォトマスク基板に付着する成れがあり、写真製版面に座敷が付着し、重大な損傷を与える虞があるのである。このため、フォトマスク基板をケース内に収置するための係具であるマスク支持体としては例えば、特開平2001-301877の第7図及び第8図に示す構成のものがある。この係具であるマスク支持体は、本体及び蓋体の内表面から必要な数の保持枝部が突出してその部分でフォトマスク基板を収置するものであり、この保持枝部に関しては幹部に傾斜平面を持つ台板部を有する保持枝部又は幹部に帽子部を有する保持枝部が明示されている。

[0003]

【発明が解決しようとする課題】前述のようにマスクケース内にフォトマスクを入れた場合、そのフォトマスク基板の取扱上フォトマスク自体の汚れを極端に嫌うことから、フォトマスクの上下表面に際しては接触汚染を極力避けることが必要である。従ってます前述の特開平2001-301877に示す幹部に帽子部を有する保持枝部に関しては、この接触面を帽子部のみに限定し、接触面を極力少くしたものであるが、この帽子部に関してはどうしてもフォトマスクの上下表面に接触し、この部分の汚染は避けられないものである。また帽子部の点で支持することから、マスクケース内にフォトマスクを入れて運搬した場合には、内部のフォトマスクが揺らされ、前記保

持枝部からはずれてしまい、それに伴う汚れが付着してしまうばかりでなく破損の恐れを有し、更にはこの帽子部とフォトマスクとの接触面がずれることにより摩擦され静電気が生じてケース内の座敷がフォトマスクの表面に付着してしまうものである。

[0004] 従って、フォトマスクに甚大な損傷を与えてしまう虞れがある。次に特開平2001-301877に示す幹部に傾斜平面を持つ台板部を有する保持枝部に関しては、この傾斜平面でフォトマスクの角部即ち稜線を支える事となり、フォトマスクの上下表面には触れないこととなる。かかる点に関しては極めて有用であるが、単に傾斜平面を有し、この面のみでフォトマスクを支持した場合には傾斜の上部方向へのフォトマスクのすれは防げるが、傾斜の下部方向へは簡単にフォトマスクがずれてしまい、また傾斜平面の水平な平面方向即ち幹部と垂線方向にはフォトマスクがずれてしまうものである。例えば特開平2001-301877の第5図に示す保持枝部の配置状態においては、図面上において上下方向にずれてしまうものであり、第6図に示す場合にはフォトマスクの中心部分を軸芯として回転する方向には簡単にずれてしまうものである。マスクケース内にフォトマスクを入れて運搬した場合には、内部のフォトマスクが揺らされて、前述と同様保持枝部からはずれてしまい、破損の恐れを有し、更にはこの傾斜平面とフォトマスクとの接触面がずれることによりフォトマスクの稜線部分が摩擦されフォトマスクに静電気が生じて座敷が表面に付着してしまうものであって、フォトマスクに甚大な損傷を与えてしまう虞れがある。

[0005] 更には、フォトマスクをこれらの保持枝部

20 でそれを生じさせずに支持するためには、保持枝部に極めて高い力量をかけてフォトマスクを本体と蓋体で押さえ付ける事が必要であって、これによりフォトマスクに傷を付けてしまう虞れもある。また、フォトマスクを挟み込むことにより本体と蓋体との間に隙間の生ずる虞れもあり、ケース内の座敷の侵入を助長してしまう可能性をも有する。以上のようにケース内でフォトマスクを、ずれることなく正確にかつ安全に定位させることは極めて困難であった。本発明は、かかる観点に鑑み、上記問題点を解決しフォトマスクをその上下表面に触れることがなく正確にかつ安全に定位させ、運搬時の衝撃によってもフォトマスクがずれることを防止することができる保持部を有するマスクケースの提供を目的とする。

[0006]

【課題を解決するための手段】上記目的を達成するために請求項1に係る発明は本体と本体の開口部を閉鎖する蓋体とを有するフォトマスクを収納するためのマスクケースにおいて、本体の内部の本体開口部上方及び奥方向にフォトマスクを収置するための傾斜面のある保持部を有し、蓋体を閉めた場合にこれららの保持部に対応する蓋体の内部にフォトマスクを押えるための傾斜面のある保

5  
止部を有するマスクケースであって、本体の開口部方向の係止部はその傾斜面をケース中心部に向かって徐々に低くなるように配設し、本体の奥方向の係止部はその傾斜面をケース開口部方向に向かって徐々に低くなるように配設し、蓋体の開口部方向の係止部はその傾斜面をケース奥方向に向かって徐々に低くなるように配設し、蓋体の奥方向の係止部はその傾斜面をケース中心部に向かって徐々に低くなるように配設し、蓋体を閉めた場合に、本体の係止部と蓋体の開口部方向の係止部はそれぞれの傾斜面によりフォトマスクの後縫部分を上下方向から押えると共に前後左右方向から押えることを可能とするマスクケースであり、係る発明により前記課題を達成できる。

【0007】また請求項2に係る発明である略四角形状のマスクケースの本体の内部のそれぞれの角部からやや中心部方向にそれぞれフォトマスクを配置するための傾斜面のある係止部を4つ有すると共にこれに対応して蓋体の内部にフォトマスクを押えるための傾斜面のある係止部を4つ有するマスクケースであって、本体の開口部方向の二つの係止部はその傾斜面をケース中心部に向かって徐々に低くなるように配設し、本体の奥方向の二つの係止部は互いに向き合い、お互いその傾斜面をケース開口部方向に向かって徐々に低くなるように配設し、蓋体の開口部方向の二つの係止部はその傾斜面をケース奥方向に向かって徐々に低くなるように配設し、蓋体の奥方向の二つの係止部は互いに向き合い、お互いその傾斜面をケース中心部に向かって徐々に低くなるように配設し、蓋体を閉めた場合に本体の係止部と蓋体の開口部方向の係止部はそれぞれの傾斜面によりフォトマスクの後縫部分を上下方向から押えると共に前後左右方向から押えることを可能としたマスクケースによっても達成できる。或いは請求項3に係る発明である蓋体の係止部はその両端部方向に係止部基部を有し、中央部が傾斜面よりもなる階ブリッジ形状の係止部であるマスクケースであってもよい。

【0008】更に請求項4に係る発明である蓋体の係止部の係止部基部にはそれぞれ大きさの異なる孔を有し、他方蓋体の係止部の配設箇所に前記4に對応する二つの大きさの異なる突出部を設け、前記係止部基部の孔に突出部を嵌入することにより係止部の配設箇所の位置決めを可能としたマスクケースであってもよい。この他請求項5に係る発明である蓋体の係止部に導力性を有するPPブロック共重合体又はウレタン樹脂を用いたマスクケースでも同様である。また請求項6に係る発明である本体の係止部の係止部基部にはそれぞれ大きさの異なる二孔を有し、他方本体の係止部の配設箇所に前記孔に対応する二つの大きさの異なる突出部を設け、前記係止部基部の孔に突出部を嵌入することにより係止部の配設箇所の位置決めを可能としたマスクケースでもよい。また請求項7に係る発明のように本体の内部の連結部押入口

側であって奥方向の係止部の近傍に、ケース奥方向に向かって徐々に係止部の傾斜面程度の高さになる傾斜辺を有する補助受け台リブを有し、フォトマスクを押し入れる際に傾斜辺にそって係止部の傾斜面迄フォトマスクの後縫部分を導くことを可能としたマスクケースでもよい。【0009】この他請求項8に係る発明のように本体の内部の開口部側から、本体の開口部方向の係止部の傾斜面延長在した該傾斜面の高さよりやや高い補助位置決めリブを有し、フォトマスクの配置箇所を規制可能とすると共に係止部の傾斜面に配置したフォトマスクが開口部側にずれることを補助位置決めリブにより阻止可能としたマスクケースでも同様である。或いは請求項9に係る発明のように蓋体の内部の連結部押入口側から、蓋体の奥方向の係止部の傾斜面延長在したリブを有していると共に該傾斜面の高さよりやや高いリブ突出部を有し、係止部の傾斜面に配置したフォトマスクが奥方向にずれることをリブ突出部により阻止可能としたマスクケースでもよい。この他請求項10に係る発明のように蓋体の内部の開口部側から、蓋体の開口部方向の係止部の傾斜面延長在したリブを有していると共に該傾斜面の高さよりやや高いリブ突出部を有し、係止部の傾斜面に配置したフォトマスクが開口部方向にずれることをリブ突出部により阻止可能としたマスクケースでもよい。この他請求項11に係る発明のように本体及び又は蓋体の内部の両側面に、該側面部分からフォトマスクを収納した際のフォトマスクの周辺部分にまで延長するリブを有し、フォトマスクの配置箇所を規制可能するとと共に配置したフォトマスクが方向にずれることをリブにより阻止可能としたマスクケースでもよい。

30 30 【0010】

【発明の実施の形態】図1は、本発明に係るフォトマスクのマスクケースの一実施の状態を示す図であり、略四角形状を基盤とするマスクケースの本体1とこの本体の開口部を構うためのマスクケースの蓋体2からなる。本体1と蓋体2で被せることにより、マスクケースを閉鎖可能である。この本体1と蓋体2によって閉鎖した場合の合わせ目に該当する本体1の開口周縁11及び蓋体2の開口周縁21はそれぞれ突出壁110, 210を有し、これらが互いに嵌め合わされることにより印合せとなり、閉鎖時の密封の度合いを高めている。次に本体1と蓋体2とは両者を連設し、かつ両者を閉鎖自在に曲折可能な丁番部分として、連結部3Cより連設されている。この連結部3は、本体1及び蓋体2の連結部押入口12, 22に押入する舌片部32を略U字状の連結部本体31の両端部に有し、U字状の連結部本体31の開口側の舌片部32にそれぞれ接触片35を有している丁番形状からなる。この接觸片35はそれぞれの舌片部32を水平状態とした場合はU字状の連結部本体31の開口を保ったまま、接觸片35の一側面である接觸面351同志が接觸状態となる。

【0011】従って、この接觸片35をケース内部方向に

向けた状態で連結部3のそれぞれの舌片部32をそれぞれ本体1及び蓋体2の連結部押入口12、22に押入する事ができ、本体1と蓋体2を閉じた状態にした場合には前述のように舌片部32が水平状態となり、接触片35の接触側面351同志が接触状態となって、この部分の密封度を高めることができる。次にこの状態から蓋体2を開被した場合にはU字状の連結部本体31の部分が曲折して開被を可能とする。この様な連結部3を配設した位置と対向方向である本体1と蓋体2の開被部分においては本体1及び蓋体2の凹部13、23を有し、凹部13、23に閉鎖スライダー4を有している。閉鎖スライダー4は本体1の水平部13や突出導通片131等によって可動方向を規制していると共に閉鎖スライダー4が蓋体2の閉鎖プロック231等を挟み込む事により本体1と蓋体2とを係止してロック可能とし、反面この閉鎖スライダー4を可動することにより、この挟み込みを解除して蓋体2を開被可能とする。この様な閉鎖スライダー4は、本体1及び蓋体2のそれらの内部方向に向けて設けられている凹部13、23内に配置されるものであり、閉鎖スライダー4を配設した状態で本体1及び蓋体2の外表面から閉鎖スライダー4が外部に突出しない状態で記載されている。

[0012]以上のように連結部3及び閉鎖スライダー4はそれぞれ本マスクケースの外周側面とほぼ同一平面上に位置することができると共にマスクケースの本体1と蓋体2との合わせ部を印籠合わせとした上で同一線上にすることができる。従って例えばこの部分に粘着テープを巻いた場合には、マスクケースの本体1と蓋体2との合わせ部を同一線上とでき、かつ全て平面として巻き付けることができ、密封性を極めて高く維持でき、ケース内の塵埃の侵入を極めて高い確率で防止できる。尚、必要に応じて本体1と蓋体2との合わせ部分にパッキング等を配設するものであってもよい。次に、本体1にはその内周面の側面にリブ14が設けられており、蓋体2と同様にその内周面の側面にリブ14を有している。これにより、ケースの変形を防止しており、本体1及び蓋体2が変形に伴う合わせ部のずれを防止できることとなり、両者の隙間の発生を防止でき、かつ本体1及び蓋体2の強度を増すことを可能とする。併せて、このリブ14、24の内マスクケースの両側辺部分に配設したリブ14、24は、フォトマスクを収納した際に横方向へのフォトマスクのずれを防止するためにフォトマスクの両側辺近傍まで延在している。

[0013]特に図に示す様に蓋体2のケース内部には蓋体2の内部の周面に底部から開口部へ突出したリブ14を有しており、蓋体2の外周縁21に設けられた突出壁210との間に隙間を有して立設した位置決めリブ25を有している。これは、蓋体2を被せた場合に本体1の内周縁11に設けられた突出壁110と蓋体2の外周縁21に設けられた突出壁210による印籠合わせのずれを防止するため

のものであり、本体1の内周縁の突出壁110がケース内部方向にずれおちてくことを防止して印籠合わせのずれを防止している。次に本体1の内部には略四角形状のケースのそれぞれの角部からやや中心部方向に4か所、それぞれフォトマスクを載置し係止するための係止部16がありこの部分にフォトマスクを載置して位置決めし、ケース内に収納可能としている。この係止部16は係止部基部161とフォトマスクと接続する上面部に斜傾面162とを有しており、この斜傾面162にてフォトマスクの下面側の側辺の角部である稜線部分を当接することにより、位置決めされる。この場合、係止部16の内、本体1の凹部13側に位置する二つの係止部16は、その斜傾面162の傾斜の低い端部162aが本体1の内側方向にあり、高い端部162bが本体1の外側方向にあって、斜傾面162の傾斜が本体1の凹部13側の側辺に平行に外側方向の端部を高くして徐々に内側方向に向かって低くなるようにそれぞれ配設されている。

[0014]また、係止部16の内、本体1の連結部押入口12側に位置する二つの係止部16は、その斜傾面162の傾斜の低い端部162aが本体1の内側方向にあり、高い端部162bが本体1の外側方向にあって、斜傾面162の傾斜が本体1の凹部13及び連結部押入口12のない兩側邊に平行に外側方向の端部を高くして徐々に内側方向に向かって低くなるようにそれぞれ配設されている。なお、これらの係止部16の傾斜面162を支える係止部基部161は、フォトマスクを載置すべき高さを維持するための一定の高さを有している。従って、本体1はフォトマスクを載置する場合に本体1の凹部13側の開口部よりフォトマスクを差し入れた場合に、本体1の連結部押入口12側に位置する二つの係止部16の傾斜面162の傾斜は、本体1の奥側が高く、開口部側が低くなっていることから、フォトマスクの差し入れ奥側の下面側の側辺の角部である稜線部分は、この傾斜面162により定位位置で押し止められ、フォトマスクを定位位置にて押し止めて本体1の奥側へ一定以上押し入れることを防止でき、フォトマスクの差し入れ方向のずれを防止できる。

[0015]この状態でフォトマスクの手前側即ち本体1の開口部側に位置する端部を下げてフォトマスクを係止部16に載置した場合には、この本体1の凹部13側に位置する二つの係止部16の傾斜面162の傾斜は、本体1の両側辺側が高く、本体1の内部側が低くなっていることから、フォトマスクの両側部の下面側の側辺の角部である稜線部分がこの傾斜面162に載置されることとなり、フォトマスクの横方向からの押さえを行なうことができ、フォトマスクの差し入れ方向に対して横方向のずれを防止できる。これらの係止部16の傾斜面162はフォトマスクの上下面の表面に接するものではなく、いわゆる稜線部分に接するものであり、フォトマスクの面を接触により汚す事はない。また、本体1の奥方向の二つの係止部16の傾斜面162の傾斜の方向と、本体1の開口方向

の二つの係止部16の傾斜面162の傾斜の方向とが、いわゆる対向する方向であって交差方向に両者が向いており、定位盤にフォトマスクを設置可能とすると共にそれを防止でき、かつフォトマスクの収納に際しても定位盤から若干ずれて収納した場合にも容易に定位盤に修正可能となる。

【0016】なお、係止部16の傾斜面162は半導体間連で多用されるオレフィン類により構成されることが望ましい。また、これらの係止部16は、本体1Cと一体成形で配設されるもののほか、例えば本体から突出部を有し、これに対して係止部基部161Cとの突出部に嵌合する孔を有しており、傾斜面162を有する係止部16の係止部基部161の孔に前記突出部を嵌合することにより本体1Cに嵌合するものであってもよい。例えば係止部基部161Cに二つの孔を有し、これに適合する二つの突出部を本体1Cに有していれば、配設時の傾斜面162の方向の規制を容易に可能とする。また、本体1の連結部押入口12側に位置する二つの係止部16の間であって、やや本体1中心部方向に補助受け台151を有している。これは、本体1の開口部方向は低く、奥に行くにしたがって高くなっている傾斜された補助受け台151である。

【0017】従って、フォトマスクを本体1に収納するために開口部方向から本体1の連結部押入口12側の係止部16に向かって座屈場合に、フォトマスクの奥方向の下面の接線部分が、この補助受け台151に沿って本体1の奥方向に押し入れる際の方向規制を可能とする。特に傾斜を有しており、フォトマスクを補助受け台151に沿って押し入れると、徐々に係止部16の傾斜面162の高さ近く迄達し、そのまま係止部16の傾斜面162に当接することができる。従って、フォトマスクの載設の際の便宜を図れ、定位盤にきっちりと定位できる。尚、補助受け台151は開口部側が低いことから、フォトマスクを4か所の係止部16Cに載設すると、もはやフォトマスクと接触することはない。また、本体1の開口部方向には補助位置決めリブ152を有しており、フォトマスクを係止部16に載設する場合に、フォトマスクを定位盤に定位するためのものである。

【0018】即ち、フォトマスクを奥側の定位位置まで達しない状態でフォトマスクを係止部16Cに載設しようとした場合には、開口部方向の補助位置決めリブ152が邪魔になり、開口部方向の係止部16Cはフォトマスクは乗らないものであり、定位盤にまでフォトマスクを導いた場合には、もはや補助位置決めリブ152が邪魔にならず前記口部方向の係止部16に載設可能となる。従って、補助位置決めリブ152は、フォトマスクの定位盤よりも開口部方向に配設されているものであればよい。次に、蓋体2の内部にも略四角形状のケースのそれぞれの角部からやや中心部方向に4か所、それぞれ載設したフォトマスクを係止するための係止部26を有している。これらの係止部26はそれぞれ本体1の係止部16と対応する部分に

配設されており、本体1の係止部16上にフォトマスクを載設して蓋体2を閉めた場合には、それぞれの係止部16に対応する位置の蓋体2の係止部26Cによって押さえられるものである。この係止部26は、係止部基部261とフォトマスクと接触する面を斜傾面262とからなり、蓋体2を閉めた場合にフォトマスクの上面側の側辺の角部である接線部分がこの蓋体係止部26の傾斜面262に当接され、上方方向から下方方向に押さえられる。

【0019】この場合、係止部26内に、蓋体2の凹部23側に位置する二つの係止部26は、その斜傾面262の傾斜の低い端部262aが蓋体2の内側方向にあり、高い端部262bが蓋体2の外側方向にあり、斜傾面262の傾斜が蓋体2の凹部23及び連結部押入口12のない両側面に配設されている。また、係止部26の内、蓋体2の連結部押入口12側に位置する二つの係止部26は、その斜傾面262の傾斜の低い端部262aが蓋体2の内側方向にあり、高い端部262bが蓋体2の外側方向にあって、斜傾面262の傾斜が蓋体2の連結部押入口12側に平行に沿って配設されている。なお、これらの係止部26の傾斜面262を支える係止部基部261は、フォトマスクを定位盤にて押さえための高さを維持するため一定の高さを有している。従って、本体1内にフォトマスクを載設して蓋体2を閉めた場合に、ケースの奥側即ち連結部押入口12側に位置する二つの係止部26は、ケースの機方向の内側に向けてその傾斜面を低くしており、フォトマスクの差し入れ方向の両側面の上面側の両側辺の角部である接線部分をこの傾斜面262で当接し、フォトマスクの差し入れ方向の両側方向からの押さえを行なうことができる。また、フォトマスクの差し入れ手前側であるケース開口部側の上面側の側辺の

【0020】角部である接線部分は、蓋体2の凹部23側に位置する二つの係止部26の傾斜面262の傾斜が当接するものである。この係止部26は蓋体2の中心部方向に向けて底へ低くなっている。ケース開口部側が高くケース中心方向が低くなっている。ケースの両側と平行に傾斜面262を向けており、ケースの縦方向即ち奥方向にてその傾斜面を低くしており、フォトマスクの差し入れ方向の両側面の上面側の両側辺の角部である接線部分をこの傾斜面262で当接して開口部方向へのずれを防止できるものである。なお、係止部26の傾斜面262は半導体間連で多用されるオレフィン類の他、弾力性を持って押さえるためにPPブロック共重合体からなるものやウレタン樹脂などにより構成されるものであってもよい。この係止部26は、係止部基部261に傾斜面262を有する構成の他、例えば両端部分を係止部基部261とし、その中间部分を傾斜面262としたブリッジ状の係止部26であってもよい。弾力性を有する部材又はこれと共にブリッジ状として弾力性を持たせることにより蓋体2を閉めた場合にフォトマスクを弾力を持って押さえることができ、フォトマスクに傷を付けてしまうようなことを防止でき

るばかりでなくそれの防止も図ることもできる。

【0021】また、これらの係止部26は、蓋体2に一体成形で配設されるもののはか、例えば本体から突出部を有し、これに対して係止部基部26aにこの突出部に嵌合する孔を有しており、傾斜面26zを有する係止部26の係止部基部26aの孔に前記突出部を嵌合することにより蓋体2に嵌着するものであってもよい。例えば両端部に係止部基部26aを有しそれぞれ孔を有し、これに適合する二つの突出部を蓋体2に有していれば、配設時の傾斜面26zの方向の規制を容易に可能とする。特に二つの突出部の形状、長さや大きさ等と前記二つの孔の形状、深さや大きさ等を変えることにより、所定の傾斜を希望する向きに合わせて嵌入できることとなる。また、蓋体2の連結部押入口22側に位置する二つの係止部26の間であって、やや蓋体2の連結部押入口22aにリブ24を有していると共に蓋体2の凹部23側に位置する二つの係止部26の間であって、やや蓋体2の凹部23にリブ24を有しており、併せてこれらのリブには前記突出部241を有している。これらのリブ24及びリブ241は、フォトマスクとは通常接触しないが、取扱上ケースに大きな衝撃を受けて係止部26の彈力的な押さえのスクロークを越えてしまった場合に、フォトマスクがずれることをなくすための押さえである。

【0022】以上のように、本体1の係止部16と蓋体2の係止部26は、それぞれに対応して配設されており、上下方向からの挟みこみをすることによりフォトマスクの上下面の角部である稜線部分を押さえてフォトマスクの収納時の位置決め及びズレを防止している。この場合、本体1及び蓋体2の対向している係止部16と係止部26はそれぞれその傾斜面を交差方向に向けており、フォトマスクの上下面の各稜線部により四方から押さえこむこととなる。さらに補助位置決めリブ152やリブ241により強い衝撃を受けた場合でもフォトマスクのずれを最小限に押さえることができるようにわざり二段構えのずれ防止措置をとっている。以上のように、本体1内にフォトマスクを位置決め配置したして蓋体2を閉めた場合にフォトマスクの上面側の倒辺の角部の稜線部分は、この蓋体係止部26の傾斜面26zに当接され、上方方向から下方方向に押さえられることとなり、フォトマスクを静止状態で定位することができる。さらに本体1及び蓋体2の対向している係止部16と係止部26はそれぞれその傾斜面を交差方向に向いてフォトマスクの上下面の各稜線部により四方から押さえこむものでありフォトマスクがずれることなくマスクケース内に収納できる。

【0023】また係止部26の弾力を持ってフォトマスクを押さええることからフォトマスクのずれをさらに押さえることができるとと共にフォトマスクの破損も防止できる。また、フォトマスクの角部である稜線部分のみが各係止部16, 26aに接触してフォトマスク自体に触れずに嵌置できる。これらによりケース内のフォトマスクのす

れにより生ずる静電気を防止でき、不要な粉塵がフォトマスクに付着することを防止できると共に各係止部の接触によるフォトマスク表面の汚れを防止できる。併せて、マスクケースの取扱上においてフォトマスクのずれによるフォトマスクの破損等も十分に防ぐことができる。なお、マスクケース自体に静電気を生じる事を防ぐ帯電防止のため導電性樹脂類をコーティングした素材を用いた場合であっても、或いは帯電防止効果の高い導電性ゴムを配合したアクリル系樹脂を用いるものであってもよい。これによってケース自体に生ずる静電気を防なし、不必要に塵埃をケースに付着させることを防止できる。図2は従来例の一例を示す図であり、本体7と蓋体8とが丁番90の各々の翼部90aにより連結されており、本体7の開口周縁から突出形成された板の先端に設けられた本体側止ブロック71と閉鎖したときにこれに接合する蓋体側止ブロック81を係止スライダー95によって係合する構造である。

【0024】従って、この係止スライダー95は蓋体8の上部方向に位置されてケース外部に突出形成されているものである。この部分に粘着テープを巻回した場合には係止スライダー95の部分が盛り上がり、隙間が生ずることとなってしまうものである。またこの部分をすり下りて、この係止スライダー95より下の部分のみ粘着テープで巻回した場合には、突出形成された本体側止ブロック71の周辺と蓋体側止ブロック81の周辺には粘着テープが巻回されずに隙間を残してしまうこととなり、この部分よりケース内部に塵埃が入ることとなってしまう。また、本体7には係止部75を有しており、いずれも傾斜面75zを有しているが、これらは全てケースの両側逆方向から徐々に内側であるケース中心に向かって低くなる傾斜であり、傾方向の動きはある程度制御できるが、統方向のずれには無力で近いものである。さらに蓋体8には稜線形状の係止部85を有し、この係止部85の先端に帽子部を有している。従って、蓋体を閉めた場合にはフォトマスクの上面表面にてこの帽子部が接し、フォトマスクを押さええるものである。これは、フォトマスクの表面に接しましまうものであると共に帽子部の先端部分の一点で押さえられるものであり、フォトマスクのずれを押さえ上では極めて脆弱である。

【0025】更に、この部分に力を加え過ぎた場合にはフォトマスクの破損などの虞れも生ずる。図3は、本マスクケースの蓋体2を開いた状態を示す図である。本図に示すように本体1の凹部13側に位置する二つの係止部16及び部13の側面に平行に配設され、本体1の連結部押入口12側に位置する二つの係止部16は凹部23及び連結部押入口22側に位置する二つの係止部16は凹部23及び連結部押入口22のない両側辺即ちケースの開口部方向から奥方向に平行に配設されている。更に、蓋体2の凹部23側に位置する二つの係止部26は蓋体2の凹部23及び連結部押入口22のない両側辺に平行に配設されている。また、蓋体2の連結部押入口22側に位置する二つの係止部26は

蓋体2の連結部押入口22側の側辺に平行に沿って配設されている。従って蓋体2を閉めた場合には、本体1の係止部16とこれに対応する蓋体2の係止部26はそれぞれ交叉する方向に向いており、フォトマスクを上下面のみならず更に四方から押えることができる。図4は、本体1の係止部16の一例を示す図であり、二つの円筒形状の脚部を連接部で構成した係止部基部161と傾斜面162からなる。この傾斜面162がフォトマスクの稜縁部が接するものである。なお係止部基部161の二つの円筒形状の脚部にはそれぞれ幅の異なる孔を有している。

【0026】本体1にそれぞれ太さの異なる二つの突出部を設け、この突出部を前記孔に嵌入することにより、本係止部16を本体1に配設できる。例えばこの様に太さの異なる二つの突出部を設けることにより、本係止具16の取り付け方向を間違えにくかつ簡単に行なえる。図5は、蓋体2の係止部26の一例を示す図であり、両端部分を係止部基部261として、その中間部分を傾斜面262とした斜ブリッジ状の係止部26を示す。両端部分は、係止部基部261が開いてしまわないように連接部材で連絡されている。従って、この傾斜面262にてフォトマスクの稜縁部が接するものである。特に係止部基部261間に傾斜面262を有することからこの傾斜面262は弾力を持つ事となり、フォトマスクを押圧することができる。また二つの係止部基部261にはそれぞれ幅の異なる孔を有している。蓋体2にそれぞれ太さの異なる二つの突出部を設け、この突出部を前記孔に嵌入することにより、本係止具26を蓋体2に配設できる。この様にすることにより、前述と同様、本係止具26の取り付け方向を間違えにくかつ簡単に行なえる。

【0027】

【発明の効果】1、本発明に係るマスクケースは、本体の傾斜面を有する係止部をケース閉口部方向と奥方向の傾斜の向きを変えると共に蓋体の係止部にも傾斜面を有し、蓋体を開じた場合に両者の係止部の傾斜面が交差するよう構成し、本体に開口部方向の係止部の傾斜面を左右方向の傾斜とし、奥方向の係止部の傾斜面を前後方向即ち奥から閉口部方向に徐々に低く傾斜させ、蓋体に開口部方向の係止部の傾斜面を閉口部方向から奥方向に向かって徐々に低く傾斜させ、奥方向の係止部の傾斜面を左右方向の傾斜とすることにより、挟み込まれるフォトマスクが上下方向のはか前後左右方向から押さえられることとなり、収納時のフォトマスクのずれがなくなり、係止具とフォトマスクの間に発生するずれによる摩擦から生ずる静電気を防ぐことができ、フォトマスクに塵埃の付着を防止できるという第一の効果を有する。

【0028】また、ずれがなくなることからフォトマスクの破損の防止にも役立つ。

2、フォトマスクとは本体及び蓋体の係止部の傾斜面で接するものであり、フォトマスクの稜縁部分だけが接触

することから、フォトマスクの上下面の表面には係止部が接触せず、フォトマスクの表面を汚す事がないという第二の効果を有する。

3、蓋体側の係止部をいわゆるブリッジ状にすることにより、弾力を持ってフォトマスクを押えることができ、フォトマスクのずれを効果的に防止できると共にフォトマスクの破損を防止できるという第三の効果を有する。

4、補助受け台リブにより、フォトマスクの装着時の位置決めを正確にかつ容易にできるという第四の効果を有する。

5、補助位置決めリブ、リブ突出部、リブにより収納したフォトマスクについて、マスクケースに大きな衝撃を与えた場合でもフォトマスクのずれを防止できるという第五の効果を有する。またフォトマスクの収納時の位置決めに際しても役立つものである。

【図面の簡単な説明】

【図1】 本発明に係るフォトマスクのマスクケースの一実施の状態を示す図

【図2】 従来の一例を示す図

【図3】 本発明に係るフォトマスクのマスクケースの蓋体を開いた一実施の状態を示す図

【図4】 本体の係止部の一例を示す図

【図5】 蓋体の係止部の一例を示す図

【符号の説明】

1 本体

1 1 閉口周縁

1 1 0 突出部

1 2 連結部押入口

30 1 2 1 接触片嵌入凹部

1 3 凹部

1 3 0 水平部

1 3 1 突出導通片

1 4 リブ

1 5 1 補助受け台リブ

1 5 2 補助位置決めリブ

1 6 係止部

1 6 2 傾斜面

2 蓋体

40 2 1 閉口周縁

2 1 0 突出部

2 2 連結部押入口

2 2 1 接触片嵌入凹部

2 3 凹部

2 3 1 閉鎖プロック

2 4 リブ

2 4 1 リブ突出部

2 5 位置決めリブ

2 6 係止部

接觸片嵌入凹部

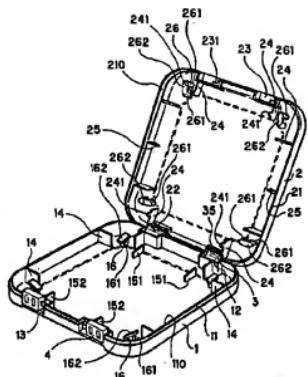
50 2 6 2 傾斜面

3 連結部  
 3 1 連結部本体  
 3 1 2 背面部  
 3 2 舌片部  
 3 2 1 舌片部孔  
 3 5 接触片  
 3 5 1 接触侧面

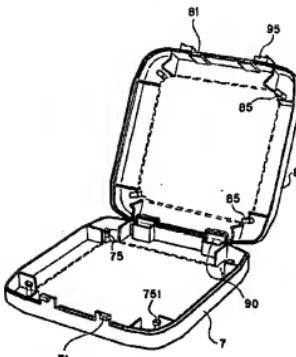
\*

- \* 352 接触片突出部
- 4 閉鎖スライダー
- 40 閉鎖スライダー本体
- 41 突出導通路嵌入片
- 42 突出位置規制片
- 43 切欠部

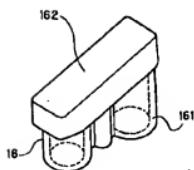
[图 1]



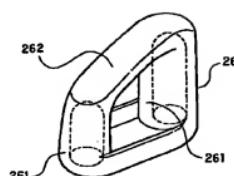
[圖2]



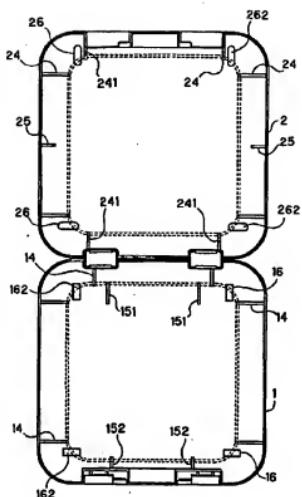
[图4]



[図5]



【図3】




---

フロントページの続き

F ターム(参考) 2H095 BB29 BE12  
 3E061 AA30 AB09 AD09 DB17  
 3E096 AA01 BA15 BA20 BB05 CA02  
 CB03 CC02 DA03 DA23 DB06  
 DC04 EA02Y FA09 GA03  
 GA11  
 5F031 CA07 DA12 EA10 EA12 EA19  
 FA04 FA07